



Sustainability in the last mile online food delivery: an important contribution using the case study of “Glovo”

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DECLARATION OF ORIGINALITY

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Barcelona, 30 June 2021

A handwritten signature in black ink, appearing to read "Federica Zampieri". The signature is written in a cursive, flowing style.

ABSTRACT

The online food delivery industry is one of the most promising industries worldwide, characterized by an increasing annual growth rate. In this context, last mile online food delivery platforms have particularly emerged and gained importance. Since last mile represents the most air polluting stage of the entire supply chain, it is worth to put particular attention on this last step. The aim of this Master thesis is to analyse the broader impacts of online food delivery considering economic, social and environmental issues, the so called “Triple Bottom Line”. Considering this as a new research field, new insights are gained through a qualitative case study research design based on “Glovo”, a company which has its main business, namely the last mile online food delivery, in the analysed sector. The results give interesting insights about the main challenges such companies have to deal with and potential sustainable business practices.

Keywords: Sustainability; Last mile delivery; Online Food Delivery Platforms; Urban areas; Supply Chain

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1. INTRODUCTION

The importance of the online food delivery market has outstandingly increased over time. As a matter of fact, the global online food delivery segment has significantly grown its revenue in the last years and it is expected to reach US\$151,526 million in 2021, showing an annual growth rate of 6,36%; in particular, the market wider segment is represented from Platform-to-Consumer delivery, with a projected market value of US\$79,608 million in 2021 (Statista, n.d.-a). Analysing the European market, the total revenue of Platform-to-Consumer deliveries more than doubled from the year 2017 to 2020 and it is expected to be around US\$9 million by 2024 (Blumtritt, 2021).

Platform-to-Consumer delivery is, together with Restaurant-to-Consumer delivery, the main business model of the online food delivery sector. The primary difference between these business models is the delivery method. While Restaurant-to-Consumer delivery orders are made online and the restaurant is responsible for the delivery, by the Platform-to-Consumer delivery model, both online order and delivery are carried out by the platform. Nowadays, the latter delivery segment is raising faster and has a strong growth potential (Blumtritt, 2018). Third party platforms such as Just Eat, Takeaway.com and Deliveroo are de facto increasingly assuming importance in our reality (the European market). For instance, in 2020, Europe Food Delivery app users were approximately 150 million (Business of Apps, n.d.).

Because of its size, significant growth potential and consequently growing competition, the online food delivery sector is of crucial relevance for the current society. At the same time, this sector has to deal with multiple challenges, especially in urban areas. Last mile delivery services require the management of high customer expectations and fast and affordable delivery with a low margin product (Deloitte, n.d.), making efficiency, time and costs optimization essential. Moreover, last mile costs generally account for more than 50% of the total delivery costs (Joerss et al., 2016), tightening this last supply chain step even more.

Another major challenge that needs to be taken into account is the deliveries' environmental impact. In fact, within the entire B2C supply chain (as in the case of Platform-to-Consumer delivery), the last mile represents one of the most air polluting stages and consumers are increasingly becoming aware of this (Gevaers et al., 2014). Therefore, it is important that companies of the sector start putting more attention on the sustainability of their actions and strategies.

In particular, online related last mile deliveries have enormous impacts on urban areas, emphasizing environmental problems even more (Viu-Roig & Alvarez-Palau, 2020). According to a cost simulation of (Gevaers et al., 2014), although customers' environmental awareness has been increasing for the last years, the willingness to pay more in exchange of a more sustainable delivery option still remains low. Among others, this consumers' attitude represents one of the main challenges of the last mile delivery sector too.

Being the online food delivery industry quite recent and being sustainability nowadays a business imperative, the aim of this thesis is to analyse the concept sustainability applied to the last mile online food delivery, which has not received particular attention from researchers until now. Given the newness of the online food delivery sector, the research is intended to enhance the understanding about sustainable last mile online food delivery, which is worthy of further research. Main challenges incurred and adopted sustainable business practices are revealed and discussed, inter alia. Furthermore, particular focus is put on the following research questions: How are online food delivery companies (such as Glovo) operating sustainable in their last mile delivery, considering economic, social and environmental issues? What are the main challenges encountered, particularly in urban areas?

For this purpose, an explorative case study will be conducted, and among other sources, in-depth interviews will be used as a practical tool to collect qualitative data of a company offering Platform-to-Consumer delivery worldwide (Glovo). Glovo is the largest on-demand platform in Europe (Glovo, n.d.-a), thus the company that represents the largest closest reality, with its main business in the online food delivery sector.

One of the main intents of this Master thesis is to address the sustainable development goals number 12 and 13 of the 2030 Agenda for sustainable development, namely “Responsible consumption and production” and “Climate action”.

The following Master thesis starts with a brief introduction and presents in Chapter 2 the concept of B2C last mile delivery, putting particular focus on the online food delivery sector and its two main business models. Moreover, main advantages and challenges are outlined in this chapter, with regard to urban areas too. An overview about the concept of sustainability and its implementation through CSR practices, in particular the Triple Bottom Line model, are given in Chapter 3. The leading ideas underlined in Chapter 2 and Chapter 3 are brought together in Chapter 4 “Sustainability in the last mile online food delivery in urban areas”. Within this chapter, an overview about the main challenges encountered in the last mile online food delivery sector and possible sustainable solutions are revealed, considering the economic, social and environmental perspectives. This classification enables the consideration of sustainability from different detailed standpoints. The last chapter, namely Chapter 5, presents an explorative case study based on qualitative data analysis of “Glovo”, a company operating in the last mile online delivery sector, with its main business in the food delivery. Finally, the results and a conclusion, including recommendations for further future research and main limitations of the study are outlined.

2. B2C LAST MILE DELIVERY: THE CASE OF THE ONLINE FOOD DELIVERY SECTOR

2.1. Concept

The term last mile delivery describes the “delivery of the product to the final end user in home” (IGI Global, n.d.). Of particular importance for this thesis is the Business-to-Consumer (B2C) last mile delivery service in the online food sector, that constitutes the very last step of a delivery and usually ends at the customer’s doorstep. Therefore, last mile represents the crucial contact point between service provider and final customer (Bosona, 2020), in this context the delivery carried out from a restaurant to a hypothetical consumer.

Findings from other researchers showed, that the character of the last mile can be identified with five principal aspects, namely the level of customer service, the kind of delivery carried out, the geographical area and market density, the vehicles and technology implemented and the environment. These factors have a great impact on the efficiency level of a delivery and determine consequently its success.

Especially through the Fridays for Future movements and the worldwide media presence in relation to climate change, consumers are becoming increasingly conscious of the environmental impacts logistic firms cause on the planet. While they ask logistic providers to reduce their carbon footprint, the majority of them is still not willing to pay an extra in exchange of an eco-friendlier delivery (Gevaers et al., 2014).

In the case of online food delivery, all the factors listed above have an even greater influence on the delivery’s success. This happens because this particular business model requires incredibly fast delivery times. In addition to this, if a rider has to deal with urban areas characterized by high mobility barriers and traffic levels, the delivery’s efficiency level will decrease automatically.

A new trend has risen in the online food delivery industry in recent years. The industry is increasingly taking advantage of online-food delivery platforms to bring its meals to the final customer and complete the last supply chain step. Although most of the meal orders are still placed by phone, there is a rising trend in placing orders via websites and platforms (McKinsey, n.d.). After ordering the food via the website or a mobile application, the latter are usually in charge of the last mile food delivery.

It is worth taking a closer look at the peculiarity of the last mile transportation of food. While e-commerce usually decreases the financial and environmental impacts of last mile transportation, the scenario for the food delivery sector looks totally different (Gee et al., 2020). As a matter of fact, while by a standard delivery items can be gathered in consolidations reducing the per-item impact, bounding of orders by food-deliveries is very challenging, leading to higher carbon emissions. Also, considering that meals are reputed low-margin products, it can be computed that in most of cases, the delivery is not profitable enough to cover the total food delivery costs. Online ordering is normally directly related to smaller order sizes,

but more frequent purchases (Gee et al., 2020). It can be assumed that this trend increases if deliveries are free of charge, as sometimes happens by online food deliveries, in particular when orders are placed and deliveries carried out from an online food delivery platform.

An important factor has contributed to the rise of the online food delivery industry. In accordance with Statista, since the beginning of the pandemic, the percentage of consumers which choose to buy their food online has increased from seven to 19 percent (Suhr, 2020). A 2020 survey carried out in Germany revealed that since the pandemic outbreak, the customers' percentage of the Platform-to-consumer business model raised by eight percent (Statista, 2020). The increase in online food deliveries has inter alia significantly contributed to the raise of solid wastes. As unrecyclable packaging is customary in this particular sector, and its disposal is harmful for the environment, particular attention should be put on this issue. Since the energy necessary in the recycling process of food delivery packaging is extremely high, particular focus should be put on decreasing packaging usage instead of trying to increase the packaging's recyclable portion (Crawford, 2021). Resuming, since the epidemic eruption the online food delivery sector saw a great surge, which gave consumers the possibility to safely dine at home, but at the same time contributed to the environmental pollution, particularly to the generation of more difficult to dispose of items.

2.2. Main advantages

As already mentioned before, the rise of the last mile online food delivery industry contributed to various positive changes in the online food market.

The online food delivery sector has seen a sharp customer increase in the last years, taking advantage of the comfort and speed of the service, which in most cases includes a low-priced or free-of-charge delivery service.

On the restaurant side, one of the main advantages of the online food sector is the low contact with the final customer, which assures revenues also in the most difficult times, such as pandemic times, where restaurants' capabilities are strongly restricted. In this case food deliveries represent a secondary source of income for restaurateurs. Despite the recent repeatedly imposed lockdowns due to a world-scaled pandemic, the online food sector did not stop working, on the contrary it continued generating profits. In fact, during lockdown periods the online food sector's total customers and revenue grew substantially (Noor & Renwick, 2020).

Furthermore, researchers found out that in countries where the new business model works efficiently, restaurants started to decrease their eating areas, thus reducing expenditures related to the physical infrastructure (Li et al., 2020). Moreover, with the emergence and rise of online food delivery platforms, restaurants can take advantage of a greater number of customers, increasing potential sales and revenues (H. S. Chen et al., 2020).

The increased sales contributed to the creation of new job opportunities. They were created to face the increasing demand, most of them in the delivery sector (riders), but also executive staff

and platform programmers (Li et al., 2020). Job creation is especially beneficial for aggregators, which are then able to extend the logistic network and create economies of scale, reducing total costs by generating a competitive advantage towards smaller competitors.

In accordance with a study about consumer behaviour towards the utilization of online food delivery platforms (Panse et al., 2019), this modern business model offers multiple advantages compared to the traditional one. Food aggregators are able to provide a less expansive service and discounts for loyal customers, building a stronger customer relationship.

After all, convenience plays a crucial role in customers' satisfaction as it strongly affects their opinion with regards to their experience with the diner, as well as with the platform they rely on. A good consumer experience is fundamental because it increases the client's intention to repurchase a product. Furthermore, the peculiar kind of technology typical of online food delivery platforms influences consumers' attitude towards online ordering. Through the utilization of online platforms, demand and supply are met in just a click. This easy order method offers the consumers high time flexibility. Customers have indeed access to the food at any time and can have it delivered directly at home. A real-time GPS based order tracking facilitates the delivery process, enabling the client to see the current status of their order and, at the same time, it creates a straight communication tool with the rider (Panse et al., 2019), decreasing the risk of information asymmetries. Information asymmetries occur when one of the parties involved possesses different information with respect to the other party. In the online food delivery sector, it is not unusual that deliveries fail due to wrong address communications between restaurateurs and riders (Corporate Finance Institute, n.d.).

In summary, the advantages of online food delivery can be divided into three main categories: First of all, on the restaurant side, the opportunity to reach out to a wider potential clientele, lower expenditures linked to the eating area and "safe" revenues even in critical times where the contact with the final customer must be minimal. Concerning the second category, namely online food delivery platforms, consumers growth means an expansion of the delivery network, enabling the creation of economies of scale and competitive advantages. Platforms can build stronger customer relationships offering discounts to repetitive customers, incentivizing them to stay loyal. Finally, on the customer's side, convenience, perception of control and time-flexibility play a major role.

2.3. Main business models

2.3.1 Restaurant-to-Consumer delivery

As in the introduction briefly described, there are two main business models at the base of the online food delivery market segment. In the first model, the "Restaurant-to-Consumer" delivery, restaurants are in charge of carrying out the delivery with their own riders, once the online order has been placed. In this case, online orders are placed through the restaurant's website or an online platform (Blumtritt, 2018).

2.3.2 Platform-to-Consumer delivery

In the second business model, the “Platform-to-Consumer” delivery, both delivery and order placement are carried out at the online platform. While the first model has a bigger global segment size, the latter model enjoys a higher average yearly growth rate (Blumtritt, 2018). It is expected that in the future this new-delivery model will exceed the traditional one, mainly to overcome the huge logistic costs of owning riders and delivery fleet vehicles (McKinsey, n.d.).

Figure 1 shows the Global Segment Sizes in million US\$ and Growth Rate of “Restaurant-to-Consumer” and “Platform-to-Consumer” delivery categories. As shown in the graph, it is foreseen that the Platform-to-Consumer business model will increasingly assume importance among online food delivery customers, with a global annual growth rate of 9,5 percent.

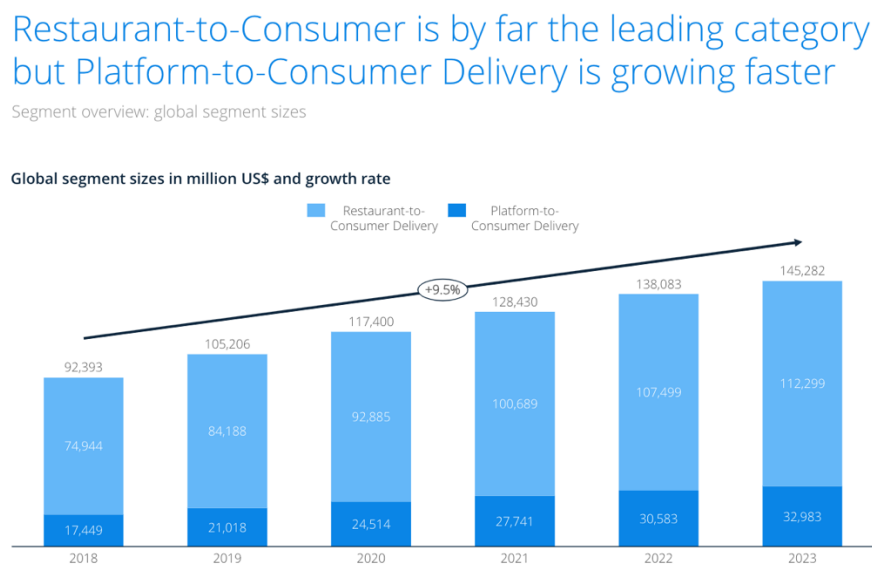


Figure 1. Global Segment Sizes.

Source: (Blumtritt, 2018)

Worth to mention is that although the “Platform-to-Consumer” subsegment, also called aggregator platform segment, can still be considered quite immature, a strong increment in this kind of delivery option is expected (Blumtritt, 2018).

This can be related to the fact that many restaurants lack the capability and financial resources to build their own delivery and logistics network. Consequently, they choose to rely on external logistics partners which can carry out deliveries and marketing activities for them, providing personnel and delivery vehicles. The Platform-to-Consumer enables restaurants, which traditionally did not perform home delivery, to exponentially increase their customer range, reaching out to further segments, boosting total revenues (McKinsey, n.d.).

On the other hand, the Platform-to-Consumer business model generates several risks to the logistic partner, which must deal with high operational risks and delivery costs (Statista, n.d.-b). Only international companies, characterized by a solid, already built infrastructure and resilient supply chain, have the capacity to compete in this segment; among these global leaders there are Foodora and Deliveroo.

A considerable disadvantage on the restaurant's side is the lower control over customer experience, compared to the other business model, since riders usually perform several deliveries for different restaurants at a time. Due to the technological improvements and innovations that drive the online food delivery sector, consumers are nowadays familiar with online shopping and like the idea of comparing different offers on a single online platform. Regarding Platform-to-Consumer delivery, they particularly appreciate the high transparency, the convenience and the functionality of ordering from different restaurants in a single transaction (McKinsey, n.d.).

Figure 2 shows the percentage of customers from selected countries who never/rarely switched aggregator platforms, as of 2016. As shown in the chart below (Figure 2), it can be deduced that the customer retention percentage for aggregator platforms is very high, which implies a high customer satisfaction and low customer fluctuations. The customer retention percentage is nearly always above 70 percent.

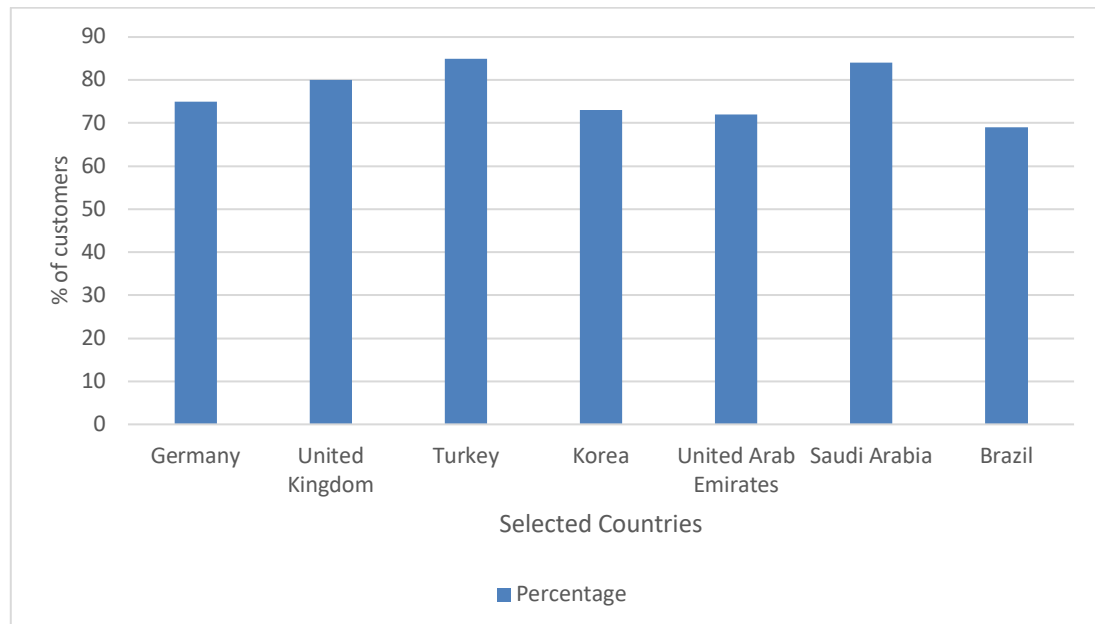


Figure 2. Percentage of customer retention.
Source: Own elaboration based on (McKinsey, n.d.)

2.4. Main challenges

2.4.1 Financial and environmental costs

As mentioned before, last mile food delivery has to deal with high costs not only from a financial point of view, but also from an environmental one. Considering both profitability and sustainability, the risk to incur in conflicts of interest is extremely high.

Many restaurants have declared to be struggling with online food platforms due to the high commissions to pay, which include the restaurant commissions, as well as a logistic service fee charged on each order (Niu et al., 2021). To cite one example, in the year 2020 most of China's third-party online food delivery platforms were charged with a 15 to 20 percent commission (Textor, n.d.). As a consequence, both restaurants and customers experience an expenditure increase, to cover the platform and logistic service provider's fee (Niu et al., 2021).

Additional costs arise for restaurants following their "imposed" transition to a delivery strategy pattern. Restaurants had de facto to rethink menus and transport packaging, in order to offer meals that could be smoothly delivered to the end customer (Splitter, 2020).

Similarly, the online food delivery industry negatively impacted the more traditional restaurants, which do not offer a delivery option. From an economic standpoint, while the growth in online food delivery is generating employment, the costs for having and maintaining an effective and fast delivery service are sharply increasing. In particular, restaurants which choose to deliver orders through self-owned employees, have to specifically train delivery staff or hire specialized delivery teams (Li et al., 2020), and this can become very expensive.

As stated from Li et al. (2020), from a financial perspective, small-medium restaurants can see declines in profits when choosing to collaborate with online food platforms, since providers tend to apply higher commissions over time and the bargaining power of such small infrastructures is too low to contest. Sometimes platforms even charge undue costs to small restaurants, accusing riders of false delivery errors. While such costs can appear insignificant at first glance, their relevance increase if summed up in the long term.

Along with economic indicators, environmental impacts represent an additional parameter to evaluate the performance of a certain supply chain, especially since consumers began to worry about environmental pollution. Efficient logistics can help decreasing environmental costs and increasing deliveries' efficiency (Helo & Ala-Harja, 2018). Worth to mention is that, from an environmental standpoint, with the rise of online food delivery demand, waste generation saw a huge surge. Extra plastic stuff and hard-to-recycle items usually complement deliveries, without the need to ask for them and are often not even touched by the final customer. Also, the production, dispatch and disposal of all these single-use items is extremely damaging for the environment and have a severe impact on global greenhouse gas emissions (Murdock, 2018). According to Eurostat, in 2018 each EU inhabitant was generating around 174 kg packaging waste, with plastic accounting for 19 percent of it. Although from 2008 to 2018 the amount of packaging material recycled and recovered experienced a slight increase (Eurostat, n.d.-b), rates are still considered too low, and an urgent improvement is necessary.

Another crucial factor contributed to the surge of plastic usage in the online food industry. Due to the global pandemic, single-use cutlery and containers are preferred among other packaging materials, to reduce the risk of transmitting the virus as much as possible (Janairo, 2021a). Although the risk of infecting customers can somewhat decrease, environmental activists are concerned about this practice's ambiental impact. The issue can even get worse when plastic packaging is improperly disposed of, for instance outside their proper recycle bin or among streets.

Restaurants' dependence on plastic in recent times can to some extent be justified from the fact that long closures and consequently negative economic effects on revenues, encouraged restaurant owners to fix financial losses, rather than focusing on finding eco-friendly solutions for their deliveries. In summary, on the one hand it is true that online food platforms contributed to restaurants' survival during the pandemic, on the other hand they led to an intolerable misuse of plastic (de Sousa, 2020).

Additionally, restaurant managers need to take into consideration the enormous food waste level generated from their managerial and strategic choices. The choice to collaborate with food online platforms can certainly have adverse consequences, among others the accuracy of demand forecasts. In fact, relying on third-party platforms reduce the power of restaurants to predict the expected demand. This in turn results in greater food waste levels and lower operational efficiency (Karamshetty et al., 2020). Demand planning represents an essential operational process within the food business to avoid excess inventory. Since the food-business is characterized by the use of perishable goods, the risk of waste is even higher compared to other industries.

Karamshetty's research team (Karamshetty et al., 2020) revealed that restaurants should strive towards supervising their demand patterns, in order to stay competitive on the market. Moreover, since in most cases a high delivery speed is required, restaurants are obliged to choose between a business strategy based on great responsiveness and consequently high food waste, or a more sustainable strategy that relies on higher delivery times. In practice, a balance between responsiveness and food waste is quite hard to achieve.

Resuming, while it is clear that platforms potentially enable an outreach to more customers, they also generate substantial financial and environmental costs. Restaurants' managers are thus in charge of analysing and quantifying the costs caused by their food delivery and should promote a responsible and sustainable use of resources and food consumption.

Since a growing amount of food delivery customers declare themselves willing to pay more for an eco-friendlier packaging, some restaurants undertook small changes which made a big difference for the environment. In particular, more focus was put on decreasing plastic and single-use items and on increasing the recyclable content of food packaging. Customers were asked if they needed extra items such as condiments, napkins and straws, which are often made out of plastic, before adding them to the delivery bag. Moreover, renewable materials such as plant-based plastics or plant leaf packaging were adopted from restaurateurs (Deliverect, n.d.).

Several studies revealed the tremendous negative environmental impacts caused by online food delivery services, in particular the increase in plastic generation derived from food containers, which will significantly increase the total greenhouse gas emissions. To reduce this phenomenon, restaurants can adopt “green” packaging alternatives, namely bioplastics-based food boxes or bagasse-based containers. Regarding the first alternative, despite the eco-friendlier materials they are made of, bioplastics are two to five times more expensive than standard materials. Concerning bagasse-based containers, which can be disposed of with natural methods in short times, they are not only more expensive than conventional plastic, but are also not suitable for hot dishes (Janairo, 2021b). In summary, online food delivery service providers should try to reduce as much as possible the negative environmental impacts of their business, especially regarding plastic usage, finding innovative, eco-friendlier alternatives and acknowledging higher expenditures.

2.4.2 Consumers’ expectations

Consumers’ behaviour has radically changed since lockdowns took place around the globe. The pandemic contributed significantly to the growth of online food delivery platforms and consumers got used to this business model. In fact, it is estimated that although lockdowns and restrictions will be eased in the future, customers’ attitudes have permanently changed, and online food platforms will continue playing a significant role in the society. This will occur for two main reasons. Firstly, because of the probability that people will pursue the preference of ordering their meals online and secondly, due to the advantages that home-delivery service can offer, above all convenience and comfort. To mention one example, factors such as weather conditions, which before represented a key factor in the choice of dining out-of-home, do not play a decisive role in today’s home-delivery system (Karamshetty et al., 2020).

Moreover, since competition in the online food delivery sector is growing rapidly, it can be assumed that platforms will try to become as competitive as possible, offering wider range of restaurants and adopting aggressive price strategies.

An additional factor influenced the change in consumers’ behaviour: Customers’ perceptions undertook a transformation due to the advance of technology, which has enormously contributed to the revolution of the food delivery industry. To order online it is only necessary to have a smartphone with an internet connection, which is available to the majority of people today.

Figure 3 shows the Global Digital Population as of January 2021 (in billions). As of 2020, the total number of smartphone users worldwide was 3,6 billion and it is estimated that this number will reach 4,3 billion just three years later, by 2023 (O’Dea, 2021).

Concerning the accessibility to the internet, it is worth to mention that in 2021 of the 4,66 billion global active internet users, almost 93 percent of them were operating via a smartphone (Johnson, 2021). This means, that almost every mobile user has access to an internet connection and could be a potential online food delivery customer.

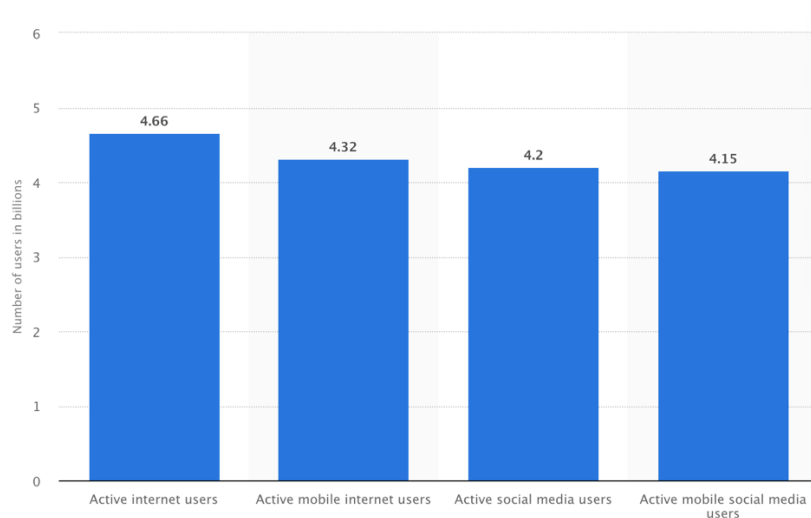


Figure 3. Global Digital Population.

Source: (Johnson, 2021)

It is expected that online food delivery demand will drastically increase in the future and more people will choose to use online platforms for their food delivery. Customers' high expectations for short and efficient delivery times will be fulfilled with the help of mobile technology, reducing the gap between customers' wishes and reality. In fact, the superior degree of informativeness ensures a better customer experience, improving the purchaser's control over the meal delivery (Panse et al., 2019).

As the popularity of online food ordering went through a significant increment, consumers continually claim improvements of the service. According to Jyotishman (2018), convenience, reliance on technology and fast delivery times are the three major factors contributing to the consumers' preference of ordering online. Additional findings of his research showed that incentives such as rewards and cashbacks have a great influence on consumers' ordering behaviour. Also, the ease of payment methods is a decisive factor when consumers have to choose between different service providers (Seghezzi et al., 2021).

Not only Jyotishman valued the delivery-time factor. Multiple researchers demonstrated that the time-saving factor significantly contributes to the customers' tendency to use online food platforms. Therefore, online food platforms providers should guarantee an inferior lead time compared to the other consumers' alternatives, such as directly pick up the order from the restaurant (Chai et al., 2019). It is essential that the consumer's motivation to order online and wait for its delivery does not decrease over time. If this will happen, restaurants operating with a traditional business model will gain a notable competitive advantage. Another dimension to take into consideration when analysing consumer behaviour patterns is safety (Chai et al., 2019). De facto, it was proven that there exists a positive correlation between privacy/security of the online food platform and consumers' tendency to use it.

Briefly, the more secure platforms' clients feel placing online orders, the more they will become accustomed and will trust this new reservation system.

Nevertheless, platforms' operators should reflect on the fact that adverse experiences and external influences have a considerable effect on the customers' mindset (Jyotishman, 2018) and because of this, they need to be careful when communicating to customers how they deal with problems (H. S. Chen et al., 2020). A research conducted in 2020 about brand experience dimensions of the Indian online food delivery platforms showed that brand experience influence customer's emotions, feelings and consequently their purchase behaviour (Habib et al., 2021). Therefore, having witnessed the high competition of the online food delivery market, platform providers should enhance their efforts in creating a reliable brand image, in order to increase customer loyalty.

H. S. Chen et al. (2020) study revealed that consumers enjoy the fact of having absolute control over the meal delivery, through an easy-to-use and real-time track system. As a consequence, the waiting time perception decreases. Under a financial point of view, customers are happy to have available a free-of-charge ordering system through the platform, and restaurants can at the same time reduce costs, cutting communication times with clients. In addition, consumers' expectations about the service quality are rising and platforms enable them to check reviews and get detailed information about food-providers and delivery performance. In just a few minutes they can gain an overall idea about the service provided by the restaurants available on the platform. Therefore, it can be deducted that for the foreseeable future it will no longer be about having dinner outside, so about the dining experience itself, but more about comfort and convenience.

Briefly, consumers' behaviour towards online food delivery is rapidly changing towards the preference of online food ordering and expectations about delivery times, convenience and reliance on technology are becoming higher. This phenomenon has the greatest impact on restaurant owners and online food platforms. While the former should guarantee convenience, fast delivery times and safety to retain existing customers and gain new ones, the latter should focus on building a strong brand image. Today, offering an excellent service is the key to stay in play in such a highly competitive market as the online food delivery one.

2.4.3 Logistic challenges: last mile food delivery problems in urban areas

Logistic challenges constitute a crucial aspect to be considered in last mile online food delivery, in particular with regard to the new Platform-to-Consumer business model. In practice, logistics represent the contact point between the main involved stakeholders like restaurants, online platforms, riders and consumers (Seghezzi et al., 2021).

Since last mile delivery represents the most challenging and energy consuming step of the supply chain (Bosona, 2020), together with financial and environmental costs and consumers' expectations, logistical challenges have to be examined more in detail. In accordance with Bosona (2020), the growing deliveries in urban areas are responsible for increasing pollution levels, traffic crashes and road damages. In particular, the blockage of the usual urban traffic

flow causes enormous losses of time and money. Since online food ordering requires fast and efficient deliveries, which in most of cases are carried out in urban centres, this issue is crucial in the online food delivery sector. Furthermore, considering that consumers count on high responsiveness and low costs, last mile delivery problems, which can arise along the way to the final customer, affect online food services even more.

Under a logistical point of view, some specific aspects of urban planning have a major impact on the success of last mile deliveries. In conformity with the surrounding urban environment and its potential constraints (Bosona, 2020), there can be limitations on the available space to drive and other restrictions on the riders' journeys. These restrictions can include traffic congestions, accidents, as well as mobility barriers. In this particular context, the choice to use bicycles to carry out deliveries can improve efficiency and decrease the lead time. In fact, to overcome challenging urban surroundings, such as very narrow streets, electric bikes can represent a valid solution. In this case, while the environmental impact of the deliveries drops, additional rider-related costs due to higher driving times rise. Nevertheless, there is no universal solution to optimally perform last mile deliveries that can fit all urban areas and every business model. For this reason, appropriate logistical plans that fit each individual urban area are necessary (Bosona, 2020).

Moreover, such plans are essential for deliveries carried out in urban contexts by service providers (online platforms), since there exists a significant difficulty to gather data and adapt them to fast-changing backgrounds.

Bosona (2020) also explains, that especially in urban areas, there is the possibility of first-delivery's failures, which bring additional costs even in repetitive deliveries. In the case of online food deliveries, the probability of delivery delays increases when the size of urban areas is bigger and road conditions are more challenging. Fortunately, because of the repeatability typical of the online food delivery service, small changes in the business model and strategy improvements can strongly enhance the efficiency and effective outcomes over time. Of course, the larger the urban area, the more difficult the implementation of such changes and the longer the transition- times will be.

In a study conducted to assess the impact of food delivery in urban areas, one of the major problems described by the author is the change in the urban traffic flow composition. In fact, delivery riders have a huge impact on the traditional traffic flow, since they generate an additional congestion group on the streets and decrease road capacity (L. W. Chen, 2019). One of the main causes of traffic congestions is that delivery riders usually work at rush hours, where the traffic flow is already overcrowded, instead of operating during night hours. They impact roads, as legal parking spaces are decreasing due to the increasing number of delivery riders on the streets. Traffic problems arise also in relation to the riders' behaviour, which often do not respect traffic regulations, use telephones while driving and tend to drive too fast (L. W. Chen, 2019). This behaviour can be related to the fact that riders are put under great pressure from companies to deliver as much orders as possible in a very short time. In order to accomplish these requirements and supply in the shortest plausible time, considering urban areas' ordinary

traffic issues, riders are encouraged to transgress street regulations. Thereby they put themselves and the surrounding environment at risk.

In the online food delivery context, the need for further regulations and a legal framework which can be easily adapted to future urban areas developments is urgent. In accordance with Seghezzi et al. (2021), the main topics which need to be deeper examined are urban planning alternatives, urban freight policies and workers' conditions.

A cost simulation conducted in 2014 by Gevaers et al. (2014) demonstrated that last mile costs are affected by different factors. Even little changes of the last mile sub-attributes have the power to considerably alter last mile costs. Within the main drivers of last mile costs, geographical characteristics play a significant role and can have a great influence on the final outcome. In fact, the authors acknowledged that there was an important cost disparity between deliveries carried out in urban and in rural areas (Gevaers et al., 2014)

This means that logistical challenges in last mile deliveries increase if urban areas are challenging to drive through or if there exist geographical constraints. Considering the online food delivery sector, which typically operates in urban areas, logistical problems are an every-day issue, which need to be deeply analysed in order to find the most efficient delivery strategy for each type of geographical area. To increase efficiency, deliveries should de facto be well-thought, choosing a certain type of delivery in relation to the specific characteristics of the urban area.

In conclusion, logistical challenges represent an every-day issue in the online food delivery sector. Logistics constitute the contact point between the main involved stakeholders. Since there is no global sustainable solution to overcome such logistical matters, it is own responsibility of food delivery providers to create accustomed logistical plans, in order to achieve the most efficient service level. This becomes even more important in urban areas defined by high population density, where the traditional traffic flow is highly threatened. To mitigate risks, an innovative legal framework needs to be developed, through the collaboration with governments and the most affected institutions.

3. SUSTAINABILITY

3.1. Concept

As a definition, sustainability is “the quality of causing little or no damage to the environment and therefore able to continue for a long time” (Cambridge English Dictionary, n.d.). Sustainability can be considered a modern concept, but in reality, it owns a long history (Spindler, 2012).

Its origins can already be found in the German word “Nachhaltigkeit”, within a forestry book at the beginning of the 18th century. At the time, the term meant the forest should not be harvested more than itself could reproduce. Later on, this expression was mostly used in relation with sustainable development, which represents the path to achieve sustainability (The World Energy Foundation, n.d.).

In accordance with the United Nations, sustainable progress is only possible if the four dimensions society, environment, culture and economy are considered as a whole. As reported in 1987 by the Brundtland commission of the United Nations, sustainable development is the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UNESCO Sustainable Development, n.d.).

As of today, sustainability can be found in relation with several topics, but its primary concern represents the preservation and safeguard of the natural environment, through the responsible use of earth’s limited resources (The World Energy Foundation, n.d.).

Sustainability is a relevant problem on a global scale and the raise of its increasing value was attested in 2015: the concept is the basis of the 17 United Nations Sustainable Development Goals (SDG’s), integrated in the 2030 Agenda for Sustainable Development, adopted by the United Nations members in 2015. The framework aims to include climate change in the development agenda of all the organization’s participants and encourage international cooperation, in the political as well in the institutional context (United Nations Sustainable Development, n.d.). Although the underlying idea of this ambitious framework is brilliant, there was no lack of criticism from global health academics and professionals. The sustainable development goals were accused of being to some extent ambiguous, inconsistent and challenging to monitor and to quantify. Despite criticism, the United Nations’ targets are a necessary framework to set concrete goals and it is important to control the progresses and achievements of each country towards a more sustainable world.

Figure 4 shows the 17 Sustainable Development Goals published from the United Nations in 2015. The published SDGs aim to stop poverty, addressing social, environmental and economic issues and encouraging the member countries to take action (Eurostat, n.d.-c).



Figure 4. The UN Sustainable Development Goals.
Source: (Global Wellness Institute, n.d.)

To follow-up the progresses made by the United Nations' member countries towards the sustainable development goals, particular indicators and statistical data are monitored through the adoption of the so called "global indicator framework". In this way, all countries obliged to make progress towards the specific objectives, are monitored and the responsibility of each stakeholder is guaranteed (United Nations SDG Indicators, n.d.).

To be able to monitor the performance, each UN member country is obliged to publish a yearly report on the process of the SDGs. The report gives a summary about the steps made so far and underlines areas where more engagement is needed. As of 2020, while some achievements were made with regard to maternal and child health and some improvements were made to increase women's participation in politics, growing food uncertainty and environmental damage still remain big issues (United Nations SDGs Report, n.d.).

The report includes important and specific tools, such as the sustainable development goals dashboards, which are created to give a very detailed overview of targets and progresses achieved for each nation. Regarding the OECD countries, which is a group of the 37 mostly developed economies (OECD, n.d.), it is worth noting that they are highly motivated in achieving the pre-determined sustainable targets and can be considered a path to follow for the remaining states.

Figure 5 shows the 2020 SDG dashboard (levels and trends) and respective progress for OECD countries. As exhibited in the table below, although advancements were made in socio-economic terms, there is still considerable work to do regarding environmental issues. In particular, the targets which display the highest red marks and consequently need more progress are SDGs number 12 and 13.

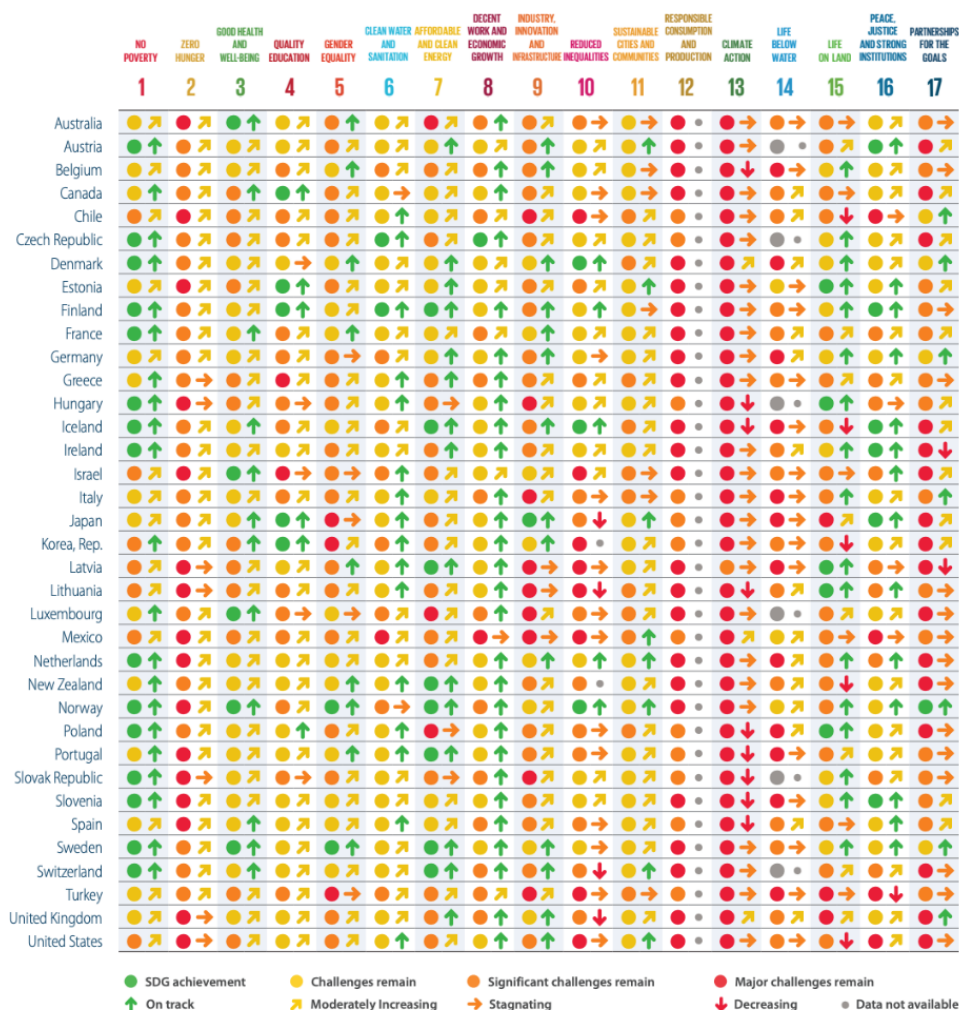


Figure 5. SDG dashboard OECD countries.

Source: (United Nations SDGs Report, n.d.)

For the world's ambition to achieve the sustainable development goals by 2030, the advent of Covid-19 has had significant impacts. The pandemic and its consequences will have harsh impacts on the fulfilment of the SDGs. The imposed economic shut-down to contain the spread of the virus caused a tremendous decline in economic activities, consequent job losses and a general increase in the poverty level in the most affected countries. For this reason, Covid-19 recovery programs need to integrate and put the sustainable development goals as a priority and as a main guide for policy makers. (United Nations SDGs Report, n.d.).

A research conducted in 2017 reveals that a clear distinction between developed and developing countries should be done when considering and implementing sustainable goals: while developed countries should focus on social and environmental issues, the latter should improve economic and social policies in the short-term (Bali Swain, 2017).

Taking into consideration this distinction, the majority of European countries should improve economic and social policies. Worth to mention is that the European Union is taking important

steps to reach the 17 goals and their 169 associated targets, through its commitment to implement sustainable solutions (European Commission, n.d.-b).

Worth to mention is that for third countries, due to lack of resources and awareness on the part of the population, the achievement of the sustainable development goals is more challenging. Therefore, these countries should be supported by developed economies and by the United Nations as the underlying institution, to reach their targets.

The European Union – 27 - progress towards the goals made during the period of time 2015-2020 are shown in Figure 6. Worth noting is that while significant progress was made towards peace, justice and strong institutions, there still exists lack of progress with regard to the goals Gender equality and Climate action.

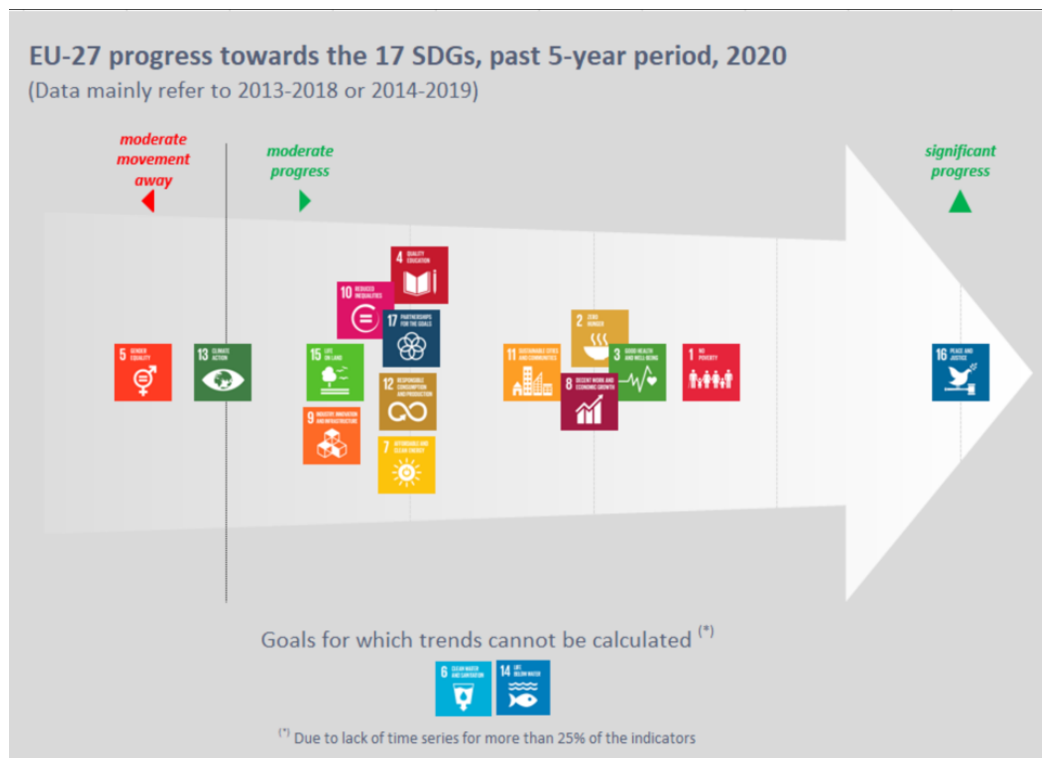


Figure 6. EU-27 progress towards the 17 SDGs.

Source: (Eurostat, n.d.-a)

Analysing the origin of each sustainable goal, a division can be done between economic, social and ecological goals. Worth to mention for the aim of this thesis, therefore for answering the underlying research questions, is the way these 17 sustainable goals can be related to the online food delivery sector. In the next chapter, a detailed explanation about how sustainability at an aggregated level can be evaluated from an economic, a social and an environmental perspective in the last mile food delivery context will be given.

3.2. Sustainability today: Triple Bottom Line and CSR

At present, literature defines the concept of sustainability directly referring to environmental, social and economic aspects. The origins of this concept can be found in John Elkington's book "Cannibals with forks: The triple bottom line of 21st century business" (Elkington, 1998). Elkington (1998) underlined the importance for companies to take into consideration social and environmental aspects when creating corporate strategies that could guarantee long-term healthy achievements.

To measure organizational performance, an innovative tool became popular across companies: The Triple Bottom Line (Høgevold et al., 2015). The framework encourages companies to behave friendly towards the society and the environment to achieve better results and to not exclusively consider financial factors when assessing the global company's performance (Schulz & Flanigan, 2016). But while economic indicators such as market shares and shareholder value are generally easy to measure, the evaluation of environmental and social aspects is often complex and difficult to identify (Høgevold et al., 2015).

An own representation of the Triple Bottom Line can be seen in Figure 7. Sustainability is an aggregate of economic, social and environmental factors, which can be considered as the three main pillars of business sustainability.

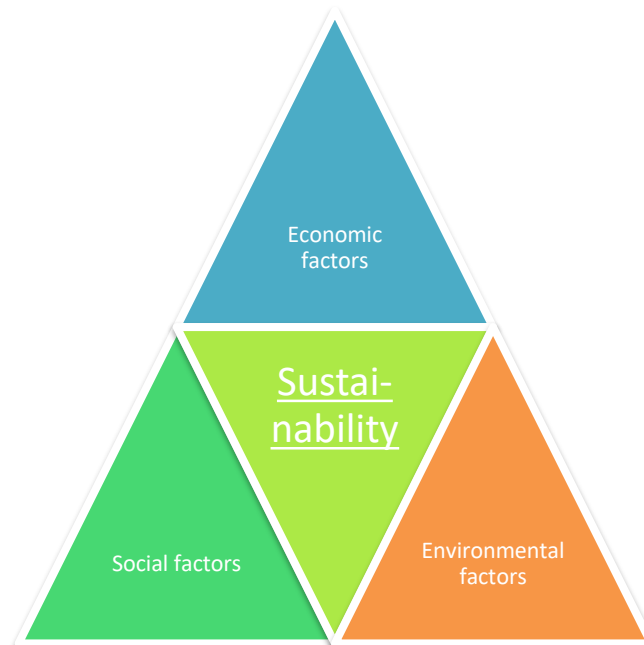


Figure 7. The Triple Bottom Line.

Source: Own elaboration based on (Wilson, 2015)

To describe how a certain company implements sustainable strategies under these three points of view (pillars), the expression "Business Sustainability" was coined. The term incorporates the consequences a company's business and its network have on the environment too. When companies endeavour for better business sustainability practices, all three categories, namely economic, social and environmental need to be taken into consideration (Svensson & Wagner, 2015). To the authors knowledge, there are 20 major constituents of business sustainability. To

cite some of them, to the economic constituents belong profitability and financial benefits, since sustainable practices are not merely applied for altruistic reasons. Quite the contrary, economic constituents are the driving force of sustainable practices, whereas environmental and social components play a secondary role. Nevertheless, the three components drive business sustainable practices collectively. Furthermore, to the social components belong a long-term perspective, as sustainable solutions need a considerable amount of time and efforts to be implemented, and the whole company's network, which has to be sustainably engaged as the principal company as well. With regards to the environmental factors, among others, the total generated carbon footprint and climate change and global warming play a noteworthy role (Svensson & Wagner, 2015).

Although the concepts CSR and sustainability are often used interchangeably, there exists a significant difference in the actual meaning (Federal Ministry of Labour and Social Affairs, n.d.). The concept CSR describes the way companies take their responsibilities towards the society at a corporate level, specifically through the implementation of sustainable business practices. Still, the main difference between sustainability and CSR practices is the considered time span. While CSR actions operate on a short-term vision at a corporate degree, sustainability aims to find a long-term solution and is directly related to the source of the issue (GreenKPI, n.d.).

Therefore, to apply the theoretical concept of sustainability to the practical corporate level, CSR practices and policies were developed and improved over the years, in order to enhance the company's impacts on society and environment, and therefore the overall business performance. In accordance with its earliest definitions (from the 50s), Corporate Social Responsibility was the necessity for managers to think about the consequences of their actions and whether they were encouraging the public good or not. Only 50 years later, with growing institutional pressures and public awareness about the issue, the concept CSR is directly linked to corporate strategy, with the aim to maximize organizational profits and reach predefined corporate objectives (Aminu & Harashid, n.d.).

In accordance with the definition of the European Union (European Commission, n.d.-a), Corporate Social Responsibility is "the process whereby enterprises integrate social, environmental, ethical and human rights concerns into their core strategy [...]" (pp. 2-3).

Being CSR practices a recent "philosophy", their effectiveness and implementation in practice are still under development, but at the same time, they demonstrated to be very fruitful for some companies. Nevertheless, corporations which are integrating CSR policies in their business practices are exposed to greater control of their value supply chains (von Hagen et al., 2014)(von Hagen et al., 2014) and their image is consequently continuously put under major risk. For instance, it is well known that social responsibility scandals have severe negative impacts on the reputation of the brand. For that reason, the demand is very sensitive and can significantly decrease when shocking incidents happen, affecting the final customer's decision to stop buying products from a certain firm. When such scandals occur, companies are put under

enormous pressure and are in charge of showing a collaborative conduct (Koenig & Poncet, 2019). To cite one iconic example, in 2015 the Environmental Protection Agency found out that Volkswagen (VW) sold about 36.000 defect cars, which were emitting up to 40 times the allowed amount of nitrogen oxide pollutants, due to a software design defect. The scandal costed VW not only a considerable fine and a huge quarterly loss, but its shares also fell by a third. Additionally, consumers lost trust in the German brand, which had to fight to bring its position on the market back to the origins (Hotten, 2015). The VW incident is just one of multiple CSR scandals which had a strong negative influence on a company's brand image. This shows two salient aspects of CSR policies implementation: if on one side CSR can enhance a business image and contribute to its positive economic growth, on the other side the exposure to greater controls enhances the risk of damaging its reputation. For this reason, it is essential that companies consider both positive and negative consequences of sustainable business practices before applying them.

4. SUSTAINABILITY IN THE LAST MILE ONLINE FOOD DELIVERY IN URBAN AREAS

4.1. Introduction

As mentioned in the chapters above, evolved online customers' expectations and enhanced sustainability requirements have dramatically changed the traditional food delivery system. As a matter of fact, last mile delivery has become more challenging than ever, if sustainable practices and urban areas characteristics are taken into account. When considering deliveries carried out in urban areas, particular attention should be put on geographic and demographic constraints.

Of particular importance in this urban context are current trends such as the increased consumers' environmental and social awareness and the changed consumer behaviour models, which have a great influence on the way deliveries are performed. Nowadays, fast deliveries are imperative and hectic freight flows are typical of urban areas. It does not suffice to just consider economic aspects, but there exists the need to satisfy social and ecological requirements (Melkonyan et al., 2020). The latter are often in contrast with cost effectiveness, since they increase total costs (at least with regards to the short-term perspective) and require significant time and effort, making management even more ambitious.

On the one hand the management of sustainable practices seems very challenging for companies, on the other hand the new requirements enable them to develop business strategies, especially delivery strategies, in a more efficient and sustainable manner (Melkonyan et al., 2020). Sustainable distribution strategies do not necessarily have to be considered a constraint, contrarily they should be reputed as a great opportunity for last mile delivery companies to improve their performance respecting social and environmental constituents. Briefly, urban logistics should represent a specialised subject matter to confront sustainability issues, given the fact that resources are limited, and economic, social and environmental goals are mutually conflicting aspects (Dolati Neghabadi et al., 2019).

Although there exists growing literature about sustainability evaluation and the interaction between economic and environmental sustainability (Niu et al., 2021), a systematic literature review about sustainability in the online food delivery sector is not feasible, due to substantial lack of data in this research field (Li et al., 2020). Only a group of researchers have tried to analyse the broader impacts of food delivery considering economic, social and environmental issues, encouraging future research work in order to cover the notable research gap.

Nevertheless, this thesis aims to give an overview about the main challenges encountered in this specific sector, particularly with respect to urban areas. This is done by explaining possible sustainable solutions and building an explorative case study to gain new insides and further cover the research gap.

In order to do this, sustainable business practices will be analysed from an economic, a social and an environmental point of view (Triple Bottom Line perspective). Moreover, Chapter 5 will present an explorative case study based on qualitative data analysis gathered from Glovo, with particular focus on its food delivery business. The major sustainability metrics that will be used to evaluate sustainability in the last mile online food deliveries, embrace environmental, social and economic impacts, which aggregated can often create conflicts of interest, due to their contradictory goals, but are necessary as a whole to achieve real sustainable development.

4.2. Main challenges

Until now, researchers have poorly addressed the sustainability issue to the particular context of last mile online food delivery, especially when considering the urban environment and its logistic restrictions. This thesis and its explorative research are thought considering the online platform business model, which allows consumers to directly order from a wide range of restaurants through a single app and get the meal delivered to home. As a matter of fact, this kind of service provider model is quite modern and has seen a particular growth only in recent times. For this reason, there subsists a lack of research in this specific field.

Since projections of online food delivery future trends are optimistic, and sustainability is an increasingly important issue at a global scale, both topics are worth to be analysed and explored together.

In the last mile food delivery segment, especially with regard to urban areas, several challenges can be encountered (Klumpp & Ruiner, n.d.).

In accordance with Klumpp & Ruiner (n.d.), innovative urban food logistics solutions put strain on the management of such digitalized business models. In particular for food supply chains, which are a distinct case compared to the other supply chains due to the perishable nature of the business, the overall management ends up being even more difficult.

The main constraints are revealed in modern literature and are represented by:

- Failed communication between leaders and subordinates, such as the wrong communication of the customer's address to the rider, that can result in delivery delays or even failures (Klumpp & Ruiner, 2018)
- Logistical constraints: Traffic issues, such as accidents, congestions and mobility barriers (Bosona, 2020); Urban environments and related constraints (Bosona, 2020)
- Growing consumers' expectations about fast, efficient and inexpensive delivery service (Panse et al., 2019), (Jyotishman, 2018), (Chai et al., 2019), (L. W. Chen, 2019)

- Growing consumers' environmental and social awareness (Sekhar Bhattacharyya, n.d.), (Melkonyan et al., 2020)
- Demand forecast issues, which can lead to higher food waste and lower operational efficiency (Karamshetty et al., 2020)
- Highly competitive business, that makes customer loyalty and retention very challenging (Habib et al., 2021)

Taking into account these main challenges, it can be deducted that there exist contradictory goals, when companies choose to not limit their business goals to economic matters. When considering environmental and social issues, day-to-day choices are not always the most profitable ones. They require a considerable amount of time and effort, which can result in higher costs in the short-term perspective.

It is worth to take a closer look at these challenges, to better understand what additional costs they can cause to the service providers and to the community.

When considering communication issues, namely information asymmetries between the different stakeholders involved, the main consequence is the delivery's delay or failure and subsequently a decrease in the responsiveness degree (Klumpp & Ruiner, 2018). Naturally, the risk of delivery delays increases with the size of the urban area under consideration. Being a good reputation so essential for online food delivery service providers, such misunderstandings can lead to a loss of customers, who will be unsatisfied, and consequently to a loss of potential profits.

As already mentioned before, the raising trend in online food ordering brought an additional traffic congestion group on the streets (Bosona, 2020). Logistical restraints typical of urban environments, such as traffic congestions, accidents and mobility barriers can have a severe impact not only on the economic conditions, but also on the ambient, considering the environmental perspective. In practice, traffic congestions significantly increase air and noise pollution and diminish the overall social welfare.

Regarding consumers' attitudes, the growing customers' expectations, which have already been object of several research, require more efforts from service providers, as they must diminish as much as possible the client's waiting time and perform deliveries correctly. Furthermore, there is another substantial issue to take into consideration. Although consumers' awareness towards environmental issues has considerably risen in recent times, customers are still not willing to pay more in exchange of a sustainable delivery option (Gevaers et al., 2014), neither are they willing to accept longer waiting times if deliveries are carried out with eco-friendly vehicles such as bicycles.

With respect to the growing consumers' environmental awareness, it has been revealed that environmental consciousness-related motives let some customers prefer ordering food online.

This happens for several reasons, such as the association in consumers' mind of sustainability and e-commerce and the idea that travelling to a restaurant will pollute the environment more than having it delivered at home, as food orders can be bound and delivered together (Sekhar Bhattacharyya, n.d.). Nevertheless, online food deliveries are also associated with traffic congestions and high carbon emissions.

Along with consumers' environmental consciousness, the online food delivery sector is experiencing a growing consumers' social awareness (Melkonyan et al., 2020). Customers are de facto increasingly paying more attention on riders' working conditions. Of particular importance for consumers in this segment is the riders' remuneration, which represents a real social issue, most of all when riders are paid based on the number of completed deliveries (Seghezzi et al., 2021). Another cause for concern on the part of customers is the fact that riders need a good insurance system, due to the high probability for them to get involved in traffic accidents (L. W. Chen, 2019). Moreover, urban plans are often not accustomed to the related urban area's characteristics/constraints, which leads to inapt and imprudent routes for riders.

Another main difficulty is represented by the lack of data and consequently inaccuracy of demand forecasts. This happens mainly due to two reasons: the first, is the trade-off every restaurant has to face between high responsiveness and high leftovers and the second is that online food delivery platforms, which are the contact point between restaurants, riders and final customers, decrease the accuracy of restaurants' demand forecasts (Karamshetty et al., 2020). This accuracy reduction can in turn boost food waste, as restaurants tend to produce more than what they actually sell.

Finally, due to the highly competitive environment, online food delivery platforms have to deal with aggressive price strategies and strong competitors. Competitors can in some cases even try to gain competitive advantages through unfair practices (Chai et al., 2019). Staying competitive on the market is consequently very demanding, since customers are generally not motivated enough to be loyal to just one service provider.

A summary of the main challenges faced by online food delivery service providers, classified in economic, social and environmental challenges, is shown in Table 1. The challenges are classified into economic, social and environmental issues.

Table 1. Main challenges

Economic	Social	Environmental
- Failed/Delayed deliveries - Unfair competition - High commissions	- Traffic issues, congestions and mobility barriers - Growing consumers' expectations - Riders' satisfaction	- Growing consumers' awareness about environmental issues - Find sustainable but profitable delivery strategies

Source: Own elaboration.

4.3. Sustainable solutions

The aim of this chapter is to present possible sustainable solutions to the main challenges faced in the last mile online food delivery sector, particularly in urban areas. Worth to mention is that, due to the diversity of each urban area, a universal solution/arrangement cannot be achieved. In order to do this in the most optimal manner, solutions will be structured on the basis of economic, social and environmental issues.

In the online food delivery context, social issues are mainly represented by logistical problems, increasing consumers' expectations and riders' satisfaction.

With regards to traffic congestions, mobility barriers and urban areas' constraints, it is known that applying the concept of sustainability to last mile deliveries in urban areas is challenging, mostly due to the fast-changing nature of urban environments (Bosona, 2020). A branch of particular significance in the supply chain is indeed urban logistics, which represents the final stage of the chain and embraces transportation actions in urban areas. Since it is estimated that by 2050 almost 70% of the total Earth's inhabitants will be established in cities, urban logistics will play a fundamental role in the everyday life. To guarantee a good social welfare and harmonization, proper urban plans, significant logistical efforts and cooperation between the main stakeholders are required (Dolati Neghabadi et al., 2019).

Regarding riders' satisfaction, it is fundamental that their safety becomes the first priority. In fact, the guarantee of a responsive service, through the in-time delivery service, increases the risk for riders to have accidents on the road, principally in urban areas where traffic conditions are often critical.

Since the traditional urban traffic flow has rapidly changed due to online food delivery platforms, law and policy makers are responsible for the development of new safety regulations, such as a reliable insurance system for riders (L. W. Chen, 2019). Interventions in the optimization of urban areas' configurations and riders' first necessities (Seghezzi et al., 2021), in particular regarding their safety, are urgently needed.

As already mentioned before, economic issues are mainly represented by failed deliveries, unfair competition and high commissions. Trying to solve these points entails several strategies. Since failed/delayed deliveries are directly related to communication issues between the main stakeholders, more focus should be put on information flows between restaurants, riders and clients. The possibility for customers to directly communicate with riders reduces information asymmetries. For example, if the rider responsible for a certain delivery misses the customer's address, she/he can immediately communicate with the interested party, instead of waiting for the restaurant's interaction.

Moreover, failed deliveries cause unnecessary food-waste. Undelivered meals could be redistributed to social institutions, people in need, or they could be resold instead of being unnecessarily thrown away.

To overcome the problem of unfair competition, price regulations and restrictions could guarantee fair competition between online food delivery platforms (L. W. Chen, 2019). Unfair

competition involves for instance the use of aggressive price strategies, that can quickly defeat smaller businesses. As a matter of fact, the latter do not possess the capabilities and scale advantages to face such price wars. Also, high commissions can represent a severe problem for restaurants, which may be compelled to succumb high profit shares in exchange of visibility on online platforms. Also in this case, regulations are necessary to safeguard restaurateurs' profits.

With regard to the environmental issues, it is well known that food deliveries cause noise as well as air pollution (L. W. Chen, 2019), considerable levels of food waste (Karamshetty et al., 2020) and extra plastic usage (Janairo, 2021a). A possible sustainable solution to air and noise pollution could be the use of electric vehicles, which would significantly decrease deliveries' total carbon footprint. On the other hand, the final customer should be willing to accept higher delivery times and possible extra charges for an eco-friendlier delivery option. In this scenario it is evident how much decisive power consumers have.

As stated before, food-waste represents one of the main issues of modern society. To fix this problem, online food delivery platforms should try to cooperate with restaurants to redistribute leftovers to people who could still enjoy the meal. This way, unsold and surplus food would be spared.

Considering the plastic usage issue, a sustainable option could represent reusable packaging to transport food deliveries or the choice to utilize paper boxes instead of plastic ones. Also, restaurants and online platforms should let the customer choose to order or renounce to cutlery, as it often remains unused.

To conclude, although sustainability and profitability could seem two contradictory goals, there are several ways to implement sustainable solutions in the online food delivery sector, without damaging potential profits. On the contrary, revenues can be maximized when considering economic, social and environmental factors as a whole. Small changes can make an enormous difference in the long-term perspective.

5. CASE STUDY: GLOVO

Next to the theoretical part of this Master thesis, a single case study is presented, which is intended to be representative and underline the relevance of the topic of this work. The entire case study aims to give new insights about the application of sustainability to the online food delivery segment. In this last chapter, the underpinned research questions are introduced, followed by the description of the chosen methodology and the presentation of two in-depth interviews. These in-depth interviews represent the primary source of the project, whereas different additional information from selected websites, that constitute the secondary sources, will be presented in support of the interviews' data. To conclude, the results and conclusion of the case study are described in detail and interpreted, including main managerial implications, limitations of the proposed case study and recommendations for future research.

5.1. Research questions

This Master thesis aims to analyse the broader impacts of online food delivery considering economic, social and environmental issues. To do this, the company “Glovo”, operating mainly in the online food delivery sector, was chosen as a model for the case study. The research gap that leads this work can be explained through the following research questions:

- How are online food delivery companies (such as Glovo) operating sustainable in their last mile delivery, considering economic, social and environmental issues?
- What are the main challenges encountered, particularly in urban areas?

Since there is almost no literature about the analysis of sustainability in the particular context of the last mile online food delivery sector, the main goal of these research questions is to cover the existing research gap, giving a detailed picture about the implementation of the concept sustainability in this sector, revealing the real challenges which a company operating in the segment has to face day-by-day and exposing feasible sustainable solutions to the encountered challenges. For this purpose, sustainability is assessed from three distinct, but closely linked standpoints, namely from an economic, social and environmental perspective. Worth to mention is that, throughout the case study, a particular focus is put on urban areas, since this is the place where the primary business, namely the online food delivery, is carried out.

5.2. Methodology

To give an answer to the above-described research questions, a single exploratory case study, based on the specific case of Glovo was selected.

Glovo was launched in 2015 in Barcelona and has since then expanded its business to 22 countries worldwide. As of today, the company can boast 3,5 million active customers, 57

thousand couriers and 74 thousand shops and restaurants. As stated on the official website, the main goal of the app is “To give everyone easy access to anything in their city” (Glovo, n.d.-b). Glovo was chosen to be the case study’s underlying example, because of its prominent business in the field, its international presence and recent efforts in creating sustainable strategies.

Given the fact that qualitative data collection is exploratory, qualitative data collection methods were selected to gain additional insights, behaviours and motivations. This allows a deeper research degree (QuestionPro, n.d.-b).

In order to cover the research gap, primary (in-depth interviews) and secondary (data collection from selected websites) sources were implemented. Two in-depth interviews were conducted, with the Glovo’s Sustainability Manager, who is responsible for the management and supervision of the company’s sustainable business practices. First of all, it is important to underline the concept of in-depth interview. By definition, in-depth interviews are “a qualitative data collection method that allows for the collection of a large amount of information about the behaviour, attitude and perception of the interviewees” (QuestionPro, n.d.-a). This particular kind of qualitative data collection was selected in order to give more flexibility to the explorative research and to investigate additional aspects, which would not be covered through a questionnaire. In this way, a more complete picture was ensured, and questions could be customized.

Some disadvantages follow this particular kind of qualitative data collection method, such as the misinterpretation of questions, which in interviews tend to be broader, or the overall invested amount of time, which is higher compared to the time invested for a questionnaire. Also, there exists the risk of biases, if the respondent is somehow influenced by the interviewer (SociologyGroup, n.d.). Nevertheless, in-depth interviews represent the most suitable tool for this particular case study project, given the need to deeper examine the underlying research questions.

In fact, a flexible configuration was given to the interviews, with some initial pre-fixed questions, which could guarantee the exploration of the main research topics, and some follow-up, spontaneous questions were added to gain deeper details. The follow-up interview’s questions can be found under the “Annex A” section at the end of the thesis. After having conducted both in-depth interviews, a detailed transcription based on recordings was done, to safeguard the integrity and precision of the collected data. Both transcriptions can be found under the “Annex B” section. Additionally, secondary sources, in particular data collected from specific websites, were used to support primary sources. Finally, the gathered information was analysed, and the main findings outlined.

5.3. Implementation

The in-depth interview was conducted in two sessions and contained an initial total number of seven open questions, aimed to examine the principal research topics. These questions were

eventually further developed into more detailed sub-questions during the conduct of both interviews (see Annex 1). The flexible interviews' configuration essentially allowed the gathering of additional elements, which were helpful to gain particular features about the research questions.

Table 2 shows the initial in-depth interview's questions, that were later further developed into more specific sub-questions.

Table 2. Initial questions.

Initial questions
1. What kinds of food delivery does Glovo offer and what differentiate them?
2. To what extent are Glovo's food deliveries sustainable? Based on what criteria do you assess sustainability?
3. Do you have specific goals targeted at improving the sustainability of food deliveries?
4. Do you adapt food delivery strategies to different urban areas?
5. What are the main challenges of sustainably delivering food in urban areas? How can you face them in the most profitable and efficient way?
6. Are governments incentivising the application of sustainable food delivery at Glovo? If so, how?

Source: Own elaboration.

The interviews were conducted on the 6th and 12th May 2021 with the party directly concerned with this thesis' research questions, namely the Sustainability Manager of the company protagonist of the case study, and lasted around 30 minutes each. This person is in charge of creating sustainable business practices for Glovo and is an integral part of the "Social Impact Team", the team responsible for the creation of social sustainability activities within the company, therefore the most suitable to answer the questions.

Furthermore, to support the primary sources, selected articles from specific websites are referred to in the "Results" section.

5.4. Results

To optimally structure the interviews' results, outcomes are organized by themes. The first theme concerns Glovo's sustainable strategies considering the economic, social and environmental perspective, whereas the second theme considers the main challenges encountered by Glovo when trying to implement sustainable business practices, always considering the three before mentioned perspectives.

5.4.1 First theme

With regards to the first theme, the aim was to analyse how Glovo is operating sustainable, considering the Triple Bottom Line, namely profit (economic perspective), people (social perspective) and planet (environmental perspective).

Concerning the economic perspective, the company is committed to the guarantee of access to the service to everyone in need, for riders as well as for restaurants and customers, through a free-to-use app (Glovo Official Website, n.d.). Moreover, Glovo is truly engaged in offering the highest level of responsiveness, delivering in extremely short times. In order to do this, food deliveries are carried out with different vehicles, which can be cars, motorbikes, bicycles and electric scooters or by foot. The choice of using electric vehicles or walking, which is up to the rider, can significantly reduce the total carbon footprint. Nevertheless, it mostly depends on the distance to cover.

With regard to the social perspective, the company implements various sustainable strategies, developed and conducted by the “Social Impact Team”. The first strategy concerns riders’ and customers’ satisfaction. Glovo’s couriers work autonomously and mostly provisionally, so that they need particular care. Within the company, a specific team is responsible for their needs and personal development, which is also in charge of helping riders find new job opportunities through the courier platform. This platform represents a sort of trampoline for their working career. Moreover, couriers’ meetings, so called “Journal reviews” are held on a regular basis, to give voice to the riders’ needs. On the other hand, to value consumers’ satisfaction with the food delivery, Glovo offers customers the possibility to rate each delivery or to give a personal opinion through questionnaires.

Another important sustainable social contribution of Glovo’s food delivery sector is represented by its social vertical helping model, in collaboration with several NGOs (EU-Startups, n.d.). The main goal of this model is to utilize Glovo’s logistics for the general welfare. Since Glovo’s logistical network is wide and riders are from time to time inactive (due to lower food delivery demand at certain times of the day), riders can choose to help NGOs distributing social orders. Also, big food companies’ leftovers and donations are redistributed by Glovo’s riders, to give meals a new life and reduce food waste as much as possible.

As a consequence, social enterprises and NGOs can take advantage of Glovo’s logistics network to discover new potential food donors that could directly fundraise initiatives (EU-Startups, n.d.).

The company also contributed to the delivery of essential supplies to particularly vulnerable populations strongly impacted by the pandemic. All these activities aimed to enhance Glovo’s social commitment, through the social platform “Glovo Access” (Glovo Access, n.d.). Moreover, Glovo participated in several activities aimed at helping the most vulnerable people during the pandemic time, as cities were put under strict lockdowns and confinement measures. In cities where the impact of the COVID-19 was particularly strong, couriers helped unprotected communities have access to food and essential supplies (Sébastien Pellion, 2020b).

Under the environmental point of view, in accordance with the Sustainability Manager, the company is working towards various environmental goals, implementing different sustainable

strategies. Three primary goals, namely food waste abatement, avoidance of single use packaging and increase in deliveries' efficiency are at the base of Glovo's efforts to reduce its greenhouse emissions and improve environmental sustainability (Pachama Blog, n.d.). Recently the company developed a greenhouse emissions' calculator, to measure and monitor emissions. Afterwards, emissions have to fall under a certain pre-determined limit. Regarding the deliveries' proficiency, Glovo's innovative last-mile delivery model has turned out to be more sustainable than the traditional one, since one-third of the total couriers carry out deliveries by bicycle. Also, the company is trying to reduce the total distance travelled by couriers, thanks to the bundle of several orders (Sébastien Pellion, 2020a).

Glovo seems to be conscious about its environmental impact and has decided to offset the total carbon emissions generated from the couriers' vehicles fleet, trying to achieve a carbon neutral delivery system. In order to reach this goal, a partnership with the company Pachama was set up, to reduce carbon emissions and contribute to the restoration of forests. A more sustainable and circular economy can be achieved through the implementation of such initiatives, increasing the shared value of Glovo's users and communities (Oscar Pierre & Sacha Michaud, 2020).

Concerning food waste, Glovo sustains a project called "Food Rescue", which aims at saving restaurants' still eatable leftovers. In order to do this, restaurant partners are helped in monetizing their leftovers and selling them through Glovo's online platform. Similarly, failed/cancelled deliveries are redirected to social institutions.

Finally, with respect to plastic usage, the company owns an internal platform called "Glovo Store" (Glovo Store, n.d.), a sort of e-commerce, where sustainable packaging is sold. The main items sold on the platform are bags, sustainable packaging and cutlery, and riders' equipment. Glovo pays 30 percent of the total packaging price and resells it to the partners, without gaining any money. Moreover, a pilot project was recently launched in Barcelona, in collaboration with the company Bûmerang, to decrease the use of plastic cutlery and food-boxes. Glovo's platform users can choose to receive a reusable packaging for their food delivery and return it later to the restaurant, instead of throwing it away.

In addition to this, in May 2020 the company made a further step towards the decrease of plastic utilization in food deliveries, giving each customer at the checkout the possibility to choose if they want to receive cutlery or not. Such actions can increase consumers' awareness of their actions and their consequent ambiental impact (Sébastien Pellion, 2020a).

In conclusion, Glovo is operating sustainably from all the three perspectives mentioned above, contributing positively to society not only in economic terms, but also in social and environmental terms. It is clear that the company is trying to make an effort and enhance the quality of life of local communities and institutions, giving access and making available its logistics network to a wide audience.

5.4.2 Second theme

With regard to the second theme, Glovo has to face multiple challenges in its last mile food delivery sector. These challenges can be observed from an economic, a social and an environmental perspective too.

In accordance with the interviews' respondent, the major problems can be summarized as follows. Economically, the main difficulties are represented by high costs, due to the required high delivery speed, typical of the food delivery sector. Also, the competition is tough and occasionally unfair, since governments are putting limitations on fees and commissions. In accordance with the respondent, this is a big issue because it creates benefits for one party (in this case for restaurants), but it also generates a negative impact on the platform side. The Sustainability Manager further explained that although the internet is a free tool to navigate, it is not free to manage, as you need people, resources, promotion and so forth. To cite one example, the Portuguese government recently introduced a maximum service fee of 20 percent on the overall transaction value, which intermediary platforms are not allowed to exceed (Atlas Lisboa, 2021).

Since this fee is universal and not based on the restaurant's scale, the solution is not suitable for every business. Ultimately, small restaurants are affected worst by this kind of restrictions.

Under the social point of view, the main challenges are represented by traffic issues and congestions, particularly in big cities, consumers' contradictory behaviour and riders' general satisfaction. Regarding consumers' behaviour, there exists a growing social issue. Customers' ask for fast and efficient deliveries, but at the same time complain about noise and air pollution. Especially in urban areas, some neighbourhoods are not used to this kind of business and are struggling to maintain a balanced social welfare.

About riders' satisfaction, it is an important social issue that cannot be generalized. The growth of online food delivery platforms came with arising debates related to riders' working conditions, mostly concerning the nature of employment. The underlying idea for platforms is that the rider's occupation should represent a temporary solution or a side job, to exercise in the most possible flexible way, whereas some workers would prefer a more fixed job configuration (Marrone & Finotto, 2019).

Due to the riders' divergent needs, it is very challenging to satisfy everyone's necessities in terms of work schedules and contracts, without creating conflicts of interest. This is mostly due to the fact that some riders prefer working on a fixed schedule and others prefer working intermittently, favouring flexibility.

From the environmental perspective, Glovo is trying to go carbon neutral by 2021, aiming to offset 100% of its deliveries' carbon emissions, which could not be reduced in some other way. Although the company started to collaborate with Pachama, a company which uses artificial intelligence to monitor, protect and restore nature (Pachama, n.d.), the complete emissions offset seems very challenging. In particular concerning the transportation emissions, costs related to the switch to electric options, need to decrease, in order to guarantee a wider accessibility to the public (Pachama Blog, n.d.). The electric market has to grow and to become accessible to everyone. In order to achieve this point, governments need to facilitate the

implementation of sustainable practices, incentivizing companies that show particular commitment in the electric field, and building a resilient and well-developed infrastructure.

A summary of the main challenges, divided by category, is shown in Table 3.

Table 3. Main challenges.

Economic	Social	Environmental
High costs	Traffic issues	Air/Noise pollution
Commissions' restrictions	Consumers' behaviour	Transportation emissions
Tough/Unfair competition	Riders' satisfaction	High investment costs for sustainable solutions

Source: Own elaboration.

5.5. Conclusion

As already stated before, the purpose of this Master thesis was to analyse the broader impacts of the online food delivery sector considering economic, social and environmental issues, answering the two following research questions:

- How are online food delivery companies (such as Glovo) operating sustainable in their last mile delivery, considering economic, social and environmental issues?
- What are the main challenges encountered, particularly in urban areas?

For this purpose, a case study was conducted, and qualitative data was collected from two main sources, in-depth interviews and supporting data from selected websites. The main outcomes were organized in two separate sections, the first concerning sustainable practices in the last mile food delivery and the second concerning the main challenges encountered, with a particular emphasis on urban areas.

The results of the first section can be outlined as follows. Under an economic point of view, the company makes its platform available not only to the main involved stakeholders, namely restaurants, riders and consumers, but also to the overall community. From the social perspective, Glovo is actively participating to the general social welfare of the communities where it is operating, redistributing food to social institutions and collaborating with NGOs through a social, vertical helping model. A specific team within the company, the “Social Impact Team” is responsible for the creation and management of these social initiatives. Moreover, under an environmental point of view, food waste abatement, avoidance of single use packaging and increase in deliveries' efficiency are the three main aspirations of Glovo. Regarding food waste, several initiatives are performed in order to give restaurants' leftovers and failed deliveries a new life. To avoid the utilization of single use packaging, partnerships with eco-friendly packaging sellers were established and customers were given the choice to

avoid cutlery. Also, to decrease deliveries' carbon emissions, almost one-third of the total deliveries are carried out with bicycles. Finally, Glovo went one step further towards sustainability, promising to offset 100 percent of its carbon emissions by 2021, through a strategic cooperation with Pachama. Overall, it is clear that the company is positively working on its sustainable business practices under the economic, social and environmental point of view.

With regard to the second section, the main challenges can be summarized as follows. From an economic standpoint, companies operating in the sector have to deal with high costs, due to the need to deliver fast and efficiently. High and occasionally unfair competition represents a substantial issue too. From the social perspective, the principal difficulties Glovo has to face are logistical problems, in particular traffic issues, contradictory consumers' behaviours and the need to cope with riders' divergent needs.

It is evident, that certain stakeholders in particular could help online food delivery platforms like Glovo overcome some of the main challenges encountered.

Especially policy makers need firstly to guarantee social welfare, incentivizing the use of electric vehicles for companies operating in the online food delivery sector, and not only for private individuals. In fact, building a resilient infrastructure for electric vehicles and making it accessible to everyone would significantly increase the choice to go electric. Also, since riders represent a new additional traffic congestion group, the guarantee of sufficient parking spaces is essential to avoid accidents and other substantial traffic issues. Sometimes, riders' tendency to violate traffic rules is directly related to parking problems. To safeguard riders' safety and well-being an accustomed governmental insurance system for this particular category is urgently required.

With regard to sustainable packaging, governments should incentivize the use of ecological materials, which are suited to dispose of or to reuse multiple times, for example giving tax incentives or subsidies to companies that are engaged in such sustainable actions.

On the consumers' side, it is essential that the overall population's awareness towards sustainable consumption increases. This could be achieved through diverse education initiatives for all generations. However, a sustainable culture should be provided especially to the younger population, given that it represents the forthcoming society and the main consumer group of the online food delivery sector. Food waste is a significant modern social issue and consumers tend to underestimate the severity of this problem and its consequences in the short as well as in the long term. Ordering more food than necessary and overeating are very usual trends and can significantly contribute negatively to the generation of food waste, as well as to the creation of health matters. For this reason, social education is vital to mitigate the adverse effects of a society that demands more food resources than needed.

As witnessed from Glovo's case study, online food delivery platforms have the power to positively impact sustainable consumption. Through the cooperation with selected strategic

partners, which demonstrate special respect towards the environment and the social welfare, more eco-friendly outcomes can be obtained, without compromising economic results. The case study results principally show that, although companies in the online food delivery sector are struggling to overcome economic, social and environmental challenges, the implementation of sustainable business practices are beneficial to all the involved stakeholders.

The choice to conduct in-depth interviews to gather qualitative data, has confirmed to be the most appropriate to study this relatively new research topic, since it allowed both interviewer and respondent to spontaneously have a more detailed dialogue, giving an answer not only to the preselected research questions, but also to further detailed questions. In fact, the initially chosen questions were quite broad and covered an extensive topic range. Gradually, particular and new specific information was given, thanks to the selected research methodology. For the purpose of obtaining the most possible representative data, the data collected through primary sources was verified and supported by secondary sources. Worth to mention is that exact answers cannot be guaranteed when choosing in-depth interviews as primary source.

Further interviews could have provided additional insights and could have given a higher reliability to the case study. For future studies, it could be insightful to furthermore analyse Glovo's entire delivery sector relating to sustainability, and not limiting the analysis to the food delivery sector. Also, further companies operating in this sector could be the object of forthcoming research.

This Master thesis has made a contribution to the analysis of the last mile online food delivery sector in sustainable terms, with a focus on urban areas, where the main business operates. Also, the main challenges encountered from the concerned stakeholders and potential solutions were examined. The outcomes can be helpful to encourage future studies in this new research field. For instance, it would be interesting to see how other companies of the food delivery sector are handling economic, social and environmental issues in their last mile, through sustainable business solutions. Moreover, it would be engaging to gather other sustainability experts' opinions and discover their personal position towards a more sustainable business vision. The potential effects of the creation of sustainable strategic partnerships on companies' profitability could be truly engaging to research as well.

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ANNEXES

Annex A: In-depth interviews' questions

1. What kinds of food delivery does Glovo offer and what differentiate them? For example, deliveries with bicycles, e-bikes, scooters...
 - What is your social vertical helping model?
 - Could you please explain me something more about these NGOs? How do they collaborate with you?
2. To what extent are Glovo's food deliveries sustainable? Based on what criteria do you assess sustainability?
 - On what specific Sustainable goals are Glovo's activities in the food delivery focused? Do you have any business tool to assess sustainable development goals?
 - Could you please explain me what this impact team is and what is its main role inside the company?
 - What do you mean by "accessible logistics to everyone"?

The aim of the thesis is to analyse how Glovo is operating sustainable in its last mile food delivery under 3 points of view: economic (profit), social (people) and environmental (planet), the so called "Triple Bottom Line":

- Economic: guaranteeing access to the service to everyone (through an app)?
 - Environmental: how is Glovo trying to reduce
 - Greenhouse emissions / air pollution?
 - Food waste?
 - Plastic usage?
 - Social:
 - How is Glovo trying to enhance employees' and customers' satisfaction?
 - Social vertical helping with NGO's
 - What do you mean by "sustainable development for employees and partners"? Do you have specific activities aimed to this development?
 - How is Glovo trying to reduce mobility barriers in urban areas and avoid traffic congestions/accidents?
3. Do you have specific goals targeted at improving the sustainability of food deliveries? If so, do you create any monthly/yearly plans to achieve these goals?

- Could you please list these OKRs and specify the objective of each one?
4. Do you adapt food delivery strategies to different urban areas?
 - How does this approach differentiate itself from the approach to big cities? Are there two different strategies?
 - How can you implement it?
 5. What are the main challenges of sustainably delivering food in urban areas? How can you face them in the most profitable and efficient way?
 - Can you please explain me these problems? Is this a consumer behaviour problem?
 - Do you have any way to overcome these problems?
 - Financial and environmental costs? Logistic challenges?
 6. Are governments incentivising the application of sustainable food delivery at Glovo? If so, how?
 - How are governments fighting against Gig economy? How does it affect your food deliveries?
 - Is the government incentivizing
 - The use of electric vehicles?
 - The use of sustainable packaging?
 - Is it building new parking spaces?
 - Is it offering an insurance system for riders?
 7. What are Glovo's main future goals in terms of sustainable food delivery and what will be the main challenges to achieve them?
 - Could you please explain me how do you want to achieve carbon neutrality for each step of the value chain?
 - How could you reach carbon neutrality in food deliveries?

Annex B: Interviews' transcription

1. What kinds of food delivery does Glovo offer and what differentiate them? For example, deliveries with bicycles, e-bikes, scooters...
We have cars, motorbikes, bicycles, walkers. Then we have the electric option. We can choose between if it is electric or not.
 - And do you have any criteria to choose between electric or not electric? No, this is up to the Glover, if to choose it or not. If the driver wants to use any kind of vehicle it is up to him. At the moment there is not an option to choose for the client. Also, the vehicle will be chosen based on the distance. For instance, bicycles are for closer orders.
2. To what extent are Glovo's food deliveries sustainable? Based on what criteria do you assess sustainability?
 - On what specific Sustainable goals are Glovo's activities in the food delivery focused? Do you have any business tool to assess sustainable development goals? We are trying to mitigate Hunger by offering our logistics for everybody. Also, what we cannot reduce from our carbon footprint, we are offsetting it with different projects from the UN, where they are helping to achieve other sustainability goals. So it is a mix between direct and indirect action.
 - Could you please explain what this impact team is and its main role inside the company? Sustainability in general through the implementation of the 5 pillars.
 - What do you mean by "accessible logistics to everyone"? Glovo offers its logistics to everyone who needs them. Right now, we have companies' donations from different organizations like Zürich, P&G, Nestle, Danone. They have done donations in order to help Glovo with logistics for everybody. Also, we have an in-house program called Glovo access, that anyone in Glovo can do an order as a courier and then each order that we do, instead of receiving money for ourselves, Glovo pays 15 euros to an NGO. So we help them with free deliveries, subvention from Glovo's employees to help developing this as well.

The aim of the thesis is to analyse how Glovo is operating sustainable under 3 points of view: economic (profit), social (people) and environmental (planet), the so called "Triple Bottom Line":

- Economic: guaranteeing access to the service to everyone (logistics for everyone)

- Environmental: how is Glovo trying to reduce
 - Greenhouse emissions / air pollution: last year we developed a calculator to measure greenhouse emissions and we have reduction plans towards this particular goal and try to control our deliveries' emissions.
 - Food waste: not only NGOs, but also the project “food rescue”, which is a kind of Too good to go. We help our partners monetizing their leftovers, to sell them at the end of the day through our platform too. Also, we try to redirect cancelled deliveries to social institutions, to give them another life.
 - Plastic usage: we have an internal platform, a sort of e-commerce where we only sell sustainable packaging that we subsidize. So Glovo pays 30% of the cost of this packaging and resell it to the partners. We don't get any benefit from that, we don't gain any money, actually we are paying to help our partners using sustainable packaging. We have a pilot launched last month in Barcelona, for reusable packaging. People can order with a special packaging, which is made of recycled plastic, they receive it and have to return it to the restaurant when they are ready, to close the circle and continue with circular economy. This is a partnership with a company called Boomerang, which cares about the inventory. We just offer the possibility in our platform to let customers choose what packaging they want to receive.

- Social:
 - how is Glovo trying to enhance employees' and customers' satisfaction?
 - Couriers are not employees, they are just externals who want to collaborate with Glovo, so they work as autonomous workers. Internally, we have a wide spectrum of people talent, who really care about riders' needs and development. Also, regularly we have a journal review, where we explain how we would like to see each other in the future.
 - Customers: we usually send questionnaires, quite often, to value the satisfaction and we give the opportunity to the customer after each delivery to rate it. We have a very high contact ratio on that.
 - Social vertical helping
 - with NGO's: the goal is to use Glovo's logistics for everybody. As you can imagine Glovo's network is very wide and there are drivers sometimes that are waiting for orders. In this time some can choose to distribute social orders. Sometimes NGOs need to deliver to someone else and as you can imagine, this has increased a lot due to COVID, as people can not move. In summary, we are using our logistics to help NGOs delivering social orders. Most of these orders are food deliveries. For instance, we are working with Banc des Aliments. There is a specific

person that is working on building this kind of network in every country Glovo is present. Usually, big companies have leftovers which will be redistributed with our logistics to the final customer (can also be donations).

- Helping riders develop themselves and their career, for instance helping them writing a CV and finding a new job. We really think that the Glover job is temporary. So we are helping people through our platform to find another job, because we feel this is just a temporary solution. If for example, you move to a new country and urgently need a job, you can start as a Glover and then we help you finding another solution.
 - Social Impact Team: we can describe it like 5 stars, the first pillar is logistics for all, then we have the courier platform or trampoline, environmental science, woman in tech (we are trying to promote tech positions for women, because we want to balance this gap, by increasing women in tech positions from 27 to 50%), and the last pillar is the B Corporation certification.
- How is Glovo trying to reduce mobility barriers in urban areas and avoid traffic congestions/accidents?

Depending on the area we have different vehicle types. The vehicles that we prefer by the algorithm, so if it is a pedestrian area or somewhere where it is really traffic congested, we try to use bicycles, but for main roads and highways we try to use cars or bigger motorbikes.

3. Do you have specific goals targeted at improving the sustainability of food deliveries? If so, do you create any monthly/yearly plans to achieve these goals?
Yes, we have different OKR's to improve these goals.
4. Do you adapt food delivery strategies to different urban areas?

We now have the approach into reaching urban areas up to 5000 people. Not only big cities. We are growing in different markets. The main goal this year is to reach 80% of the population of each country. The main challenge is in countries like Italy, where the majority live in small-medium sized cities, finding partners is more difficult.

5. What are the main challenges of sustainably delivering food in urban areas? How can you face them in the most profitable and efficient way?

Economic: the company is very driven towards speed, trying to deliver as quick as possible and trying to have the lowest possible contact ratio. We are trying to get new partners, but it is very challenging due to the high competition. Sometimes it is very unfair, because governments are not helping either. In some countries, companies put a

max cup fee over the commissions, which is a bit unfair. The internet path, even if it is free to navigate, it is not free to manage. You need people and resources. Governments should put a fee based on the restaurant scale and ability to do profits, because you have to protect the small businesses. To put a general norm is not a suitable solution, you really need to see what everyone's needs are.

Social: Yes, we are generating traffic congestions. Some neighbours are not used to this kind of economy and don't want to have somebody downstairs waiting for the food, making noise. Conflict because this same person who would like to receive food in 5 minutes, also complains about the noise and riders waiting in their streets. About riders' satisfaction it cannot be generalized, because of their different needs (some want to work normally, 6 hours a day, on a very fixed schedule, but others want flexibility and freedom, and work just when they need to). This is happening a lot and we have a full team dedicated to this, called Glovo Experience, trying to understand needs and balance schedules. They are also trying to offer a fair amount of money to every rider, not only if they work in pick times.

Environmental: Trying to go carbon neutral by 2021 is very challenging, and we are still in growth. In some markets we kind of stabilize, but we are still growing. We have 3 pillars about environmental and carbon footprint: food waste, sustainable packaging and deliveries itself. In some countries it is more challenging to implement environmental strategies (e.g., in Moldova). Regarding packaging, from July on the EU will put a new regulation and there won't be any cutlery more in plastic. We are also trying to implement it in non-EU countries because we believe it is a wise thing to do. Something which is very challenging due to the huge number of partners, but we are trying to implement anyway is to give incentives to partners that are using sustainable packaging. They will get more visibility in the rank of the Glovo app. On the delivery side, we started business B2B, for ex. with Ikea, and we want to have it fully electric or with bicycles, to eliminate CO2 emissions.

6. Are governments incentivising the application of sustainable food delivery at Glovo? If so, how?
 - Is the government incentivizing
 - the use of electric vehicles? Only on the private side, not for companies.
 - the use of sustainable packaging? Governments put regulations but are not facilitating or helping the implementation of them. People are complaining because it is also more expensive compared to plastic.
 - is it building new parking spaces? No, and this is a huge problem in general and especially right now, there are so many parking spaces being removed due to Covid, to put more tables.

- offering an insurance system for riders? No, we have an own insurance system for riders.
- 7. What are your main future goals in terms of sustainable food delivery and what will be the main challenges to achieve them?
 - How could you reach carbon neutrality in food deliveries?

The main action is first of all reduce as much as possible carbon footprint, bringing more electric vehicle models to the fleet, putting a lot of efforts towards sustainable packaging, redirecting orders to NGOs or people in need. Inside the algorithm there is something called bundling, optimizing the route and using the same rider to carry out more deliveries if they are ordered in a close timespan and neighbourhood. This system allows to save a great amount of carbon emissions.